Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1 – 35 (canceled)

36. (New) A method which may be used for producing a silicon nitride film by vapor-phase growth, wherein said method comprises:

a) reacting in a synthesis chamber a gas comprising trisilylamine with a gas comprising a hydrazine to form a precursor gas comprising a silylhydrazine;

b) feeding said precursor gas into said reaction chamber; and

c) forming a silicon nitride film on a substrate in the reaction chamber by a decomposition of said gas comprising the silylhydrazine.

37. (New) The method of claim 36 further comprising a step b) i) of feeding a gas comprising a hydrazine into the reaction chamber prior to and/or during step c).

38. (New) The method of claim 36, wherein the decomposition of said silylhydrazine is carried out at a temperature between about 300° C and about 700°C.

39. (New) The method of claim 36, wherein the pressure in said reaction chamber is between about 0.1 torr and about 1000 torr.

40. (New) The method of claim 36, further comprising feeding an inert dilution gas into said reaction chamber.

41. (New) The method of claim 36, wherein said precursor gas comprises disilylmethylhydrazine.

42. (New) The method of claim 36, wherein said hydrazine comprises 1,1-dimethylhydrazine.

43. (New) A method which may be used for producing a silicon nitride film by vapor-phase growth, wherein said method comprises:

a) reacting in a synthesis chamber a gas comprising trisilylamine with a gas comprising a 1,1-dimethylhydrazine to form a precursor gas comprising a disilylmethylhydrazine;

b) feeding said precursor gas into a reaction chamber from said synthesis chamber;

c) feeding an additional gas comprising a 1,1-dimethylhydrazine into the reaction chamber;

d) controlling a 1,1-dimethylhydrazine gas/precursor gas flow rate ratio to a ratio of from 1 to 80;

e) maintaining the reaction chamber a pressure of between about 0.1 torr and about 10 torr and a temperature of between about 300° C and about 700°C;

f) forming a silicon nitride film on a substrate in the reaction chamber.

44. (New) A method which may be used for producing a silicon nitride film by vapor-phase growth, wherein said method comprises:

a) maintaining a reaction chamber at a pressure of between about 0.1 torr and about 10 torr and a temperature of between about 300° C and about 700°C;

b) reacting a gas comprising trisilylamine with a gas comprising a hydrazine in the reaction chamber; and

c) forming a silicon nitride film on a substrate in a reaction chamber by a Low Pressure Chemical Vapor Deposition.

45. (New) The method of claim 44 further comprising a step b) i) of feeding a gas comprising a hydrazine into the reaction chamber prior to and/or during step c).

46. (New) The method of claim 44, further comprising feeding an inert dilution gas into said reaction chamber.

47. (New) The method of claim 44, wherein step b) produces a reaction product gas comprising disilylmethylhydrazine.

48. (New) The method of claim 44, wherein said hydrazine comprises 1,1-dimethylhydrazine.

49. (New) A method which may be used for producing a silicon nitride film by vapor-phase growth, wherein said method comprises:

a) feeding a first gas comprising a 1,1-dimethylhydrazine and a second gas comprising trisilylamine into a reaction chamber,

b) controlling a 1,1-dimethylhydrazine gas/precursor gas flow rate ratio to from 1 to 80;

c) maintaining the reaction chamber a pressure of between about 0.1 torr and about 10 torr and a temperature of between about 300° C and about 700°C;

d) reacting in a reaction chamber the trisilylamine with the 1,1-dimethylhydrazine to form a precursor gas comprising a disilylmethylhydrazine;

f) forming a silicon nitride film on a substrate in the reaction chamber by a Low Pressure Chemical Vapor Deposition of the disilylmethylhydrazine.